

CAMEL REARING : A SUSTAINABLE ECONOMIC ACTIVITY IN THE DESERT ECOSYSTEM.

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The Camel, "Ship of the Desert" uses various adaptive mechanisms for survival in the hot arid ecosystem. In the dryland ecosystem camel rearing is regarded as a fairly resource for sustenance. The camel possesses many unique qualities which make it distinctly superior to other domestic livestock in the hot arid and semi - arid desert ecosystem. Rapid change in agroecological condition and industrialisation in the recent past has its impact on camel management practices. In order to obtain optimum profit from camel, it is essential to adopt scientific management practices. The total world camel population is estimated to be 19.286 million of which India has third highest camel population of 1.52 million (FAO 1998) after Somalia and Sudan.

The overall productivity of the livestock sector in the arid zone is poor. The region is pronged with lack of adequate feeding resources, deficiency of macro and micronutrient, poor health cover for livestock. The animal husbandry under such degraded lands can be successful only if the livestock are basically a stable protective resource having long-term viability employment absorbing capability and income generating capacity. The livestock should be compatible with crop cultivation instead of competing with it for land and water resource. Camel rearing enterprise fits well with such requirements.

The camel is a useful component of desert ecosystem where the flora of usually marginal land can hardly meet the requirement of human food and energy. It is associated with social culture of the societies inhabiting in the dry lands. Camel carts continue to play a crucial role in the farm economy as a cheap mode of short distance transportation of different agricultural commodities. Since 85% of the gross cultivated area of the Bikaner district is nonirrigated, camel carts hold a significant potential for financing (Amresh Kumar, 1999).

Marketing of camel is considered an important trade in the Rajasthan where it is widely used as draft animal. Camel energy is not only cost effective but also profitable and remunerable.

It is therefore, necessary to learn about economic viability and sustainability by camel management system.

CAMEL AND OTHER LIVESTOCK RATIO

The ratio of camel to other livestock species in different villages of Thar districts are analysed. The camel to sheep and goat ratio is highest (1:12.45), followed by cattle ratio (1:8.56) and buffalo ratio (1:0.31). The overall Camel and Herbivore ratio is 1: 21.36 (Bhakat and Sahani 2001). Some experts have suggested that the population of cattle, buffalo, sheep and goat should be reduced to the optimum level and that camel based livestock system should be encouraged in the periphery of deserted land. In that event there will, in all probability, be no loss to the land, food and milk production as camel will cause much less damage to the ecology than other livestock (Khanna and Rai 1990). The supplementary and complementary connection between the crop sector and draught animal add to the importance of maintaining draught animals. Agriculture and draught animal go side by side in boosting farming business into a profitable enterprise. Heifer Project International (HPI), a private non-profit development agency is assisting tribal minorities who seek gainful employment using camel for transporting agricultural and Industrial products (Robert *et al.* 1997). There has been constant increase of camel driven carts even around big cities. Evaluation of IRDP in the arid lands has indicated that average increase in the income of the beneficiaries was one of the highest amongst people who has given loan for the purchase of camel and camel carts (Khanna, 1994). In the state Rajasthan major population of draft animals are bullock followed by camels. In comparison to other livestock species camel remained neglected until this century when it draw attention because of it's unique adaptive characteristics for survivability in the harsh conditions of the desert Eco-system. Cattle in the central desert of Australia with daily temperature of 40°C are reported to have died without water in four days while camels survive for more than 15 days in the same environment. It has been estimated that a well-fed camel could carry some six months energy on it's back while cattle are unlikely to have more than two-three months, if run out of food (Khanna, 1986). Therefore, camel can tolerate high temperature, solar radiation and water deprivation and subsists on poor quality thorny vegetation.

THE SCOPE OF CAMEL MARKETING AND ECONOMIC IMPACT

The animal husbandry nevertheless plays a vital role in the economy of arid region and contributes more than 60 % of the GDP of the region. The camel marketing through livestock fairs in western Rajasthan has opened new avenues for farmers (Kalla *et al.*, 1988). Marketing of camel is considered an important trade in the Rajasthan where it is widely used as draft animal. The camels are mostly marketed at big animal fair such as Nagour, Pushkar, Tilwara, Phalodi and Gogameri (Khanna, 1997). The most important constraint in the camel husbandry in Rajasthan is the lack of organised marketing of camel and it's products (Gupta *et al.*, 1998). Since, in our country camel trade mostly takes place at livestock fair, a meticulous survey is conducted at Ram Dev Animal fair at Nagour distt. (Rajasthan) with a major objective to investigate the recent trends of camel marketing system and economic impact on sustainability of marginal farmers (Bhakat *et al.*, 2001).

The maximum camel number was brought in Gogamedi followed by Pushkar and Tilwara in 1996 (Tandon *et al.*, 1997). The camel keeping at farmer's household level varies in a wide proportion. Generally it ranges from 0 to 80 camels per farmer. 70 % of farmer owned only one camel, 20 % owned 2-3 camels, 4 % owned 4-10 camels, 3 % owned more than 10 camels and only 1 % owned 80 camels where as 2 % owned no camel. The average number of camel owned per farmer at the village / house level is 4.90 out of which 3.50 are male and 1.40 are female camel. The average number of camel used to brought for sale is 2.54. The average number of camels owned per farmers at village is 5.8 while on an average 2.76 camels used to brought to the fair (Lavel *et al.*, 1997).

The average cost of camel varies according to age and sex. The camel of either sex and more than 7 year age group is costlier (Rs 9000 to 10000 /-), followed by 4-7 year (Rs 8000 to 9000 /-) and less than 3 year (Rs. 4000 to 5000) age group. On the other hand male camel is costlier than female in all age group cases. Three fourth of the marginal farmers (75 %) used to attend the fair with desire to buy at least one camel. Among them 60 % has planned to buy only one camel, 20 % plan to buy from 2 to 8 camels and 15% marginal farmers are interested to exchange their camel. The remaining 5% generally has not plan any number in advance because their purchase depended on sale of their camels at the fair. An economic analysis of drought camels as a source of livelihood at Bikaner (Rajasthan) reported that the average cost of a draft camel ranged between Rs 4000 to 10,000 (Khanna and Rai, 1996).

The cost of camel may be at variance with actual sale price at the transaction since traders always expect a higher price than what they actually get. In almost all complete transaction cases, the average expected cost prior to sale is Rs. 9000 to 10000 /- where as the average actual cost of the transaction is Rs. 8000 to 8500. The cost at sale usually 90% of the expected cost which shows that farmers achieved cost very nearer to their expectation. The study can be concluded that due to continuous drought since last three years the cost of camel appears to be going down but still farmers get maximum of their expectation from this livestock (camel) in hot arid region.

The Socio - Economic Status of Camel Keepers

The soils of western Rajasthan are low in nitrogen and organic matter content. It is naturally eroded by winds during summer and the crop yields are low and unstable. The socio-economic status of camel keepers as well as communication and transport infrastructure are very poor. Some of camel keepers follow a transmigratory system of animal management. Animal husbandry in this region depends not only on the economic and social aspects of the migrating farmers but also on the ecological and agrostological aspects of land use management.

Information from farmers are collected with respect to their inhabiting villages, districts, states they come from, distance covered to reach the camel fair ground, their vocation and category they belong etc (Bhakat *et al.*, 2001). Many important problems in camel development impinge on the socio-economic conditions of poor dry land farmers.

A. Vocation: Most of the camel keepers who use to attend fair ground are farmers (91%) belonging to different categories. Nevertheless 9 % also claim to be camel businessman and therefore to earn income from camel trade at fairs by purchasing (at a fair or in their village)

camels and then selling them for a better price. They may be considered as a middleman or mediators.

B. Inhabiting village: Major representation of the farmers at the camel fair are from Rajasthan (90 %). Some of the farmers also represented from other states viz, Haryana (8%), mainly from Hisar district and Punjab (2%). Within Rajasthan two third are from Nagour district (60%) where the fair is being conducted and other farmers mainly from Bikaner (12%), Jodhpur district (11%). Small percentage is also from other districts like Churu (3%), Sikar (2%), Jhunjhunu (2 %).

C. Distance covered : The total distance covered by farmers to reach the camel fair ground ranges from 1 to 400 km. 20 % of the camel keepers used to come from less than 10 km away from the fair ground, 28 % from 11-20 km away, 40 % from 21-50 Km away, 7 % from 51 to 100 km and 5 % from over 100 km.

D. Category of camel keepers: About ten different categories of camel keepers are involved in camel transaction business. Maximum farmers belonged to Jat category (45 %), Rajput (12 %), Muslim (9 %), Yadav (8 %), Kumbhars (5%) and remaining 21 % are of other category. The average family size of camel farmers ranges from 5.25 ± 1.33 to 8.54 ± 2.66 with overall average of 6.70 ± 0.59 individuals. The overall number of female members are 3.49 ± 0.26 where as male members are 3.21 ± 0.36 . The literacy percentage varies from 26.22 to 32.11. Most of camel keepers are having maximum non-irrigated land. The overall average land holding is 29.90 ± 1.01 ha/farmer (Non irrigated) and 15.22 ± 1.02 ha / farmer (Irrigated). Among the different categories of farmers marginal farmer formed the major group (92.50 to 96.14%) and few progressive farmers (3.86 to 7.50%) are also there. It is observed that under village condition the female members of farmers family devoted maximum time (81.85%) as compared to male members (18.15%) with day to day management of camel (Bhakat and Sahani, 2001). The major crop of kharif season are guar, moth, bajra, mung, til, etc. where as under irrigated belt, the rabi season's crops are mustard, chana, wheat etc.

The Distribution of Camel for Marketing

Maximum camel come for transaction is Male (52 %) as compared to female camel (48 %). Camels of over 7 year age group is the most representative with 57 % of all the camels followed by 4-7 year and less than 3 year age group. The distribution of camels between the various farmers (come with camel for sale) is not uniform. It ranges from 0 camel to 12 camel per farmer. More than half (54%) of them brought only one camel followed by two camels (11%), 3 camels (10 %). Two percent villagers come without any camel also involved in camel trade as a mediator between seller to purchaser. The two camel marketing channels are prevalent viz. (i) Livestock owner to users, (ii) Livestock owner to trader to user (Purohit 1999). The Bikaneri breed (90%) of camel is predominant followed by Jaisalmeri breed (10%). The maximum Bikaneri breed of camel popularly used under carting in city (83%) as well as in villages (88%) because camel carting is a subsidiary source of income of camel keepers in the hot arid region of Rajasthan (Bhakat and Sahani 2000). The study indicated that 81 % of the interviewed farmers usually attended one animal fair where as 8% attended more than one fair and only 1% attended all fairs (up to 9). Maximum farmers (85%) used to display 100 % of their camels at business ground. These farmers include all of those owning either one camel or owning 2, 3, 4 to 5 and 6 to 8

camels. Among those owning from 9 to 12 camel displays for sale a part of their herd (more than 80 % of animals).

Use of Camel Hair

The camel hair and its products can be an important source of additional income for camel keepers. The handicraft articles made up of camel hair, provide work to rural women in the field of grading of hair, tops preparation, spinning of hair, weaving, embroidery with 100% specialty hair and blending with sheep wool, goat hair, cotton and other products. Camel hair is used in village cottage industry for preparation of common utility items, viz. : Blankets, bags, mattresses, ropes, floor rugs etc. It is widely use in rural cottage industry of Rajasthan and Gujarat for preparation of various items (Sahani and Khanna 1993). The preliminary results of camel hair blends with wool, silk waste and polyester have shown encouraging results (Gupta *et al.*, 1987 and 1989). Blended products may also be prepared with sheep wool, goat hair & cotton. According to Patni and Dhillon (1988) it is worth while to blend camel hair with polyester, wool or silk waste. The camel hair is being utilised in India since ancient times. It has been estimated that a camel hair fabric of 620 gm weight will be as warm as a pure wool fabric of 900 gm weight (Khanna and Rai, 1991). The hair is spun by camel keepers by using traditional simple techniques. The coarse variety is span by Hand Dheyria. The other method of spinning fine quality camel hair is by hand charkas. In the recent times machine spinning is becoming popular for carpets, dumese clothing. The camel hair is strong and is twice as worm as wool (Khanna and Rai, 1990). The main body sites of hair coverage in the dromedary camels are shoulder, Mid portion of body, neck and hump regions. The hair of dromedary camels are durable, strong and have low conductivity (Muxsa, 1981). The camels of Bikaneri breed of 2-3 years of age produce higher annual hair yield as compared to other age groups and breeds (Bhakat *et al.*, 2002). The utilisation of camel hair is having great importance in exploiting the hair production potential and quality of hair for its future utility as pure camel hair as well as blends with other animal fibers, synthetic waste fibers and its uses in the rural cottage industry. The investigation is carrying out at NRCC as an attempt to explore the different factors influencing hair quality attributes in Indian dromedary camel managed in an organised farm and there can be help full in effective utilisation of camel hair in the form of blends etc.

Use of Camel in City and Village Area

Farmers residing in the city or Greater part of city area, used to rear their camel under semi intensive system of management and they used their camel cart to transport different agricultural products (grain bags etc.) from mandi to purchaser point and farmers inhabiting at village area used their camel cart to transport different materials (viz : fuel wood, crop yield , fodder, water etc.) in the village or surrounding villages and accordingly they used to earning money in their day to day life. The popular fodders (crop residues) used for feeding the cart camel are Moth chara (*Phaseolus aconitifolius*), Guar Phalgathi (*Cyamopsis tetragonoloba*). Although some farmers from village are providing Mumfali chara (*Arachis hypogea*) and camel from this area are browsing Jhal, Khejri and Pala leaves in the rangeland. As a special feeding farmers used to offer Mollasses, oil (ground nut /seasum), alam (hydrated aluminium Potassium Sulfate salt), and very few progressive farmers also offer Ghee. The major use of camel are carting , ploughing , water carrying and breeding etc. The main objective of camel rearing in Rajasthan is obviously animal

power for pulling a cart or ploughing (Saley, 1993) The primary activity of camel cart owner is agriculture followed by business. Although few farmers are working as labourers (daily wage basis) where as no report regarding this is available from city area. Most of the camel used under carting belongs to 6 to 8 years of age at both places. The salient characteristic features of use of camel is presented in Table- 1.

Table - 1 : Salient Characteristic Features of Use of Camel

S. No	Characteristic Features	City area	Village area
1.	Percent involvement in carting (%):		
	Farmer himself -	85.65	78.75
	Hired person -	14.35	21.25
2.	Activity of camel cart farmer (%) :		
	Agriculture	84.16	95.00
	Business	15.84	2.50
	Labourers	NA	2.50
3.	Average age of camel: (years)	7.59 ± 3.21	8.69 ± 2.90
4.	Sex of cart camel (%) :		
	Male -	85.51	77.78
	Female -	14.49	22.22
5.	Camel breed used for carting (%) :		
	Bikaneri :	82.61	87.50
	Jaisalmeri:	9.70	7.25
	Others (mixed):	7.69	5.25
6.	Average working time (hrs/day) :	7.59 ± 2.13	8.88 ± 1.64
7.	Average working days/year :	235.57 ± 4.85	247.51 ± 5.39

The cost of male cart camel is found to be higher than female camel in both city and village areas. The average cost of male camel is about Rs 10000 , Rs. 12000/- where as average cost of female camel is Rs. 8000/-, Rs. 9000 /- in city and village area , respectively. The income from camel carting is estimated to be higher in city area as compared to village area because camel keepers of city area are getting more opportunity to transport different agricultural products than village area. The per day average income from camel carting is about Rs. 250 to 300 /- and Rs. 100 to 150/- in city and village region, respectively. Most of the farmers usually purchasing their camel cart on cash payment basis. It is followed by installment basis and few marginal farmers are also purchasing on loan basis.

In city the charges are based on the total numbers of bags transported. The average carrying cost of each grain bag is Rs. 4.50 / ± 1.12 / and average bags carried out in each round is 19 .00 ± 4.21 bags. The average distance covered by cart camel is 20.50 ± 5.11 Km/day. But in the villages the Charges are based on each trip/round. The comparative study between camel and bullock carting systems (Bhakat *et al.*, 2002) revealed that pay back period is almost double in case of bullock carting as compared to camel carting, where as the Benefit Cost Ratio is ¾ the time high in case of camel carting as compared to bullock carting. Due to short pay back period and higher benefit cost ratio camel carting is profitable and advantageous over the bullock carting for small dry land farmer in the hot arid Thar desert.

MAJOR CONSTRAINTS OF CAMEL REARING

For rearing the camel in city and village area the camel keepers experienced with three major constraints. The first major problem is non or less availability of fodder for feeding the cart camel due to shortage of common grazing lands. This problem intensified during lean period (March to July). The second major problem is skin infection of cart camel. This is due to Mange (*Sarcoptes scabiei*) infection and the third major problem is costly treatment of diseases of cart camel.

HEALTH STATUS OF CAMEL

The average annual mortality in young camel calves is maximum as compared to adult camel. The average mortality camel calves (up to 1 month age) varies from 28.26 % \pm 2.55 to 39.24 % \pm 2.11 where as the average mortality of adult camel varies from 5.23 % \pm 1.44 to 10.16 % \pm 2.61. The overall average annual mortality in young calves is 33.05% \pm 2.63 where as in adult, it is 8.10 % \pm 1.07. Table- 2 represents frequency distribution of health disorders and mortality in camel of different zones of thar districts.

Table- 2 : Frequency Distribution of Different Health Disorders and Mortality in Camel of Different Zones of Thar Districts

Zones	South	North	West	East	Overall	Ranking
Types of Disorders(%)						
Parasitic Mange	80.14	73.44	72.11	76.77	75.62 \pm 1.80	I
Trypanosomiasis (Surra)	11.20	15.00	12.24	12.71	12.79 \pm 0.80	II
General Fever	3.52	5.21	6.15	4.57	4.86 \pm 0.55	III
Respiratory Infection (Pneumonia, Coughing etc)	2.99	3.35	5.70	3.83	3.96 \pm 0.60	IV
Other Problems (Digestive disorder, Worm etc)	2.15	3.00	3.80	2.12	2.76 \pm 0.40	V
Death Rate (%)						
Adult	5.23	9.15	10.16	7.86 \pm	8.10	II
	\pm	\pm	\pm	3.05	\pm	
	1.44	1.50	2.61		1.07	
Calf (<1yr aged)	28.26	35.56	39.24	29.13	33.05	I
	\pm	\pm	\pm	\pm	\pm	
	2.55	3.51	2.11	2.13	2.63	

The first ranking is obtained by parasitic mange which varies from 72.11 % to 80.14 % with overall frequency of 75.62% \pm 1.80. It indicates that, in this study area parasitic mange problem of camel is maximum / highest. This is in consistence with Lavel *et al.* (1997). In south zone of Thar desert this problems is maximum (80.14%). The occurrence of Surra

(Trypanosomiasis) varies from 11.20% to 15.00% with an overall frequency of 12.79 % \pm 0.80 and this case is found mainly in irrigated area. Surra is followed by other health disorders. General fever is getting III ranking which varies from 3.52 % to 6.15 % with overall frequency of 4.86 % \pm 0.55. Incidence of Respiratory infection (Pneumonia, coughing etc.) get IV ranking and this problem is highest (5.70%) at western zone. It varies from 2.99 % to 5.70 % with overall frequency of 3.96 % \pm 0.60. Other health problems like digestive disorders, diarrhoea, worm infestation etc occurred with a range from 2.12% to 3.80% and a overall frequency of 2.76 % \pm 0.40. No prophylactic measures are adopted in villages against parasitic or bacterial diseases. Although treatment against mange with Butox spray or Ivermectin injection is reported from villages of south and East zone. As ethnoveterinary practice camel keepers used mobile oil/kerosine oil/sesame oil and Boric powder against mange infection, Alcohol + Onion for general fever and Azoan + Molasses for coughing problems.

CAMEL BREEDING MANAGEMENT PRACTICES

Village based herding type of management system is practiced in higher rainfall areas and with intensive agricultural farming. Often 2-5 families form herding groups. The herds are grazed in various types of lands including fellow or harvested fields, gochar/orans (Sahani 1999). Camel owners can be categorised as: Camel users and Camel breeders. Camel users usually do not breed camels and camel breeders normally do not utilise camels for work. Camel users come from wide variety of backgrounds. They own one or small number of camels, mostly males for purpose of using them as work animals, most frequently for pulling of carts for generating their daily income. These users are dependent on camel breeders for supply of camels. Camel breeders own large number of camels mostly female camels, which are kept mainly for the purpose of reproduction. Camel breeders live on income generated by sale of male camels at livestock fair. The herd size is declining at fast rate due to continuous shrinking of grazing lands, cropping pattern, fast urbanization, mechanization of agricultural practices/ implements and transport system. The traditional system of management is replaced by semi-intensive and intensive system of management. The herd size and herding system are dependent on ecological parameter and availability of pasture areas. The recent survey of 196 camel owner in 23 village of Bikaner and Jaisalmer districts indicates medium size herd 40%, large size herd 28%, single male camel herd 27%, she camel herd 5%. The extensive system with free ranging is seen in bordering areas of Pakistan with Bikaner, Jaisalmer and Barmer districts. These herds are supervised mainly during 4 months of the rainy season to avoid crop damage and are also attended during the breeding season, lasting from November to March. Owners keep informed about their animals by tracing their foot prints. This type of management requires minimum inputs and labour, camels reproduce themselves and live more or less in wild state and it is very healthy practice for camels due to less disease incidence.

SUSTAINABILITY OF FARMERS

The success of livestock rearing revolve around communications network, efficient labour organization, functionally prescribed norms and social values of religious beliefs, gender role delineation and technological consideration. The pastoral production system must be analysed from various aspects viz. Pastoral economics, social and organizational structures integrated to

each other. Any analysis of camel pastoralism modes of production should focus on all these aspects of peoples live as these relate to each other and to the entire ecology of their habitat. The productivity of two major crop commonly grown in this area and their cost of cultivation along with return etc are meticulously analysed. Table- 3 represents the average economic return of camel keepers from agriculture. The per hectare productivity of Guar (4.89 q/ha) is higher than Desi Moth (2.75 q/ha). The average cost of cultivation are Rs 3200 per ha and Rs. 2525 per ha for Guar and Desi Moth, respectively where as gross return from guar is higher (Rs. 10758) than Moth (Rs 5,775 /-). A similar trend is found in case of net return. Guar provides higher net return (Rs. 7558) than Desi Moth (Rs. 3250). Return per Rupee invested is higher in Guar (Rs. 3.36) as compared to Desi Moth (Rs. 2.29). From this study it is evident that due to higher production potential, increase market price and economic advantage guar cultivation for camel keepers is more profitable than traditional moth cultivation.

Table- 3 : The Average Economic Return of Camel Keepers from Agriculture

Major Crop	Average Productivity (Q/Ha)	Average cost of Cultivation. (Rs./Ha)	Gross Return (Rs./Ha)	Net Return (Rs./Ha)	Return /Rupee Invested (Rs.)
Guar	4.89	3200.00	10758.00	7558.00	3.36
Desi Moth	2.75	2525.00	5775.00	3250.00	2.29

The economic return of camel keepers from animal husbandry is also analysed. The average economic return of camel keepers from animal husbandry is given in Table- 4. The major return from different animal sources is taken for economic calculation. The average return from cattle and Buffalo is 10 kg milk /day/ animal and from sheep is 2.50 kg wool/year/animal where as camel delivered return through carting. The average cost of rearing of camel per day (Rs. 40) is comparatively low as compared to cattle and buffalo (Rs. 55).

The sheep are reared in zero input basis (mainly on kitchen waste / grazing land). The net return from cattle and Buffalo is high (Rs. 45/day/animal) as compared to camel (Rs. 36/day/camel). The similar trend is observed in case of gross return. The gross return from cattle and buffalo, sheep and goat, camel are Rs 100/animal/day, Rs. 213/animal/year and Rs. 76/camel/day, respectively. But finally return per Rupee invested is quit high in case of camel (Rs 1.90 /-) as compared to cattle and buffalo (Rs. 1.82). This is mainly due to low rearing cost of camel than cattle and buffalo.

Rama *et.al.*, (1997) reported that the livestock farming has more or less been steady in spite of several severe droughts that the region experienced in recent years. There is a need for capital generation and raw material production for the industry to survive. An increase in demand for animal products in the urban consumer market is expected. C.M Singh (2000) suggested that the only source that is sustainable would be the small holder who generates products at moderate cost, without draining natural resources and depending on import.

Table - 4: The Average Economic Return of Camel Keepers from Animal Husbandry

Animal	Average Return	Average Cost of rearing (Rs/ani/day)	Gross Return (Rs/ani/day)	Net Return (Rs/ani/day)	Return/ Rupee Invested (Rs.)
Cattle & Buffalo	Milk-10 kg/day/ani.	55	100	45	1.82
Sheep	Wool - 2.50 kg/Yr/Ani	0	213/Ani/Yr	0.58	-
Camel	Carting	40	76	36	1.90

(Market prices fetched by the farmers for calculating the gross return is taken as Guar @ Rs. 2200/Q, Moth @ Rs. 2100/Q, Milk @ Rs10/kg., Wool @ Rs. 85/kg).

CONCLUSION

In view of many natural impediments, mainly the climatic conditions and poor soil moisture, Rajasthan appears to be more suitable for livestock farming than crop farming. Therefore, to ensure a regular income and sufficient food for farmers and better living standards, it is necessary to go for some other alternate land use based farming system or subsidiary enterprises which will provide more income and employment to the farmers. Such enterprises include camel rearing. It holds practical values for cost effectiveness, sustainable activity, environmentally friendly and socio culturally acceptable.

The main advantage of this chapter is to create awareness among the ignorant farmers and common peoples regarding the usefulness of camel. The idea of sustainability of agriculture and livestock production revolves around better utilisation of time, money, resource and family labours of the farmers. So there is a sign of hope to explore the income through camel management that exists for turning the farmer's economy viable. The camel resource of the farmers can be utilised efficiently and preserved as a fixed asset, which is a symbol of dignity, social prestige and pride to the farming community.

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